

# **Puget Sound Gateway Program**

## **SR 167 Completion and SR 509 Completion Projects**

**Joint Steering Committee**  
**September 14, 2016**

CRAIG J. STONE, PE    GATEWAY PROGRAM ADMINISTRATOR  
STEVE FUCHS, PE    SR 167 PROJECT MANAGER  
OMAR JEPPERSON, PE    SR 509 PROJECT MANAGER

# Agenda

- Welcome & Introductions
- Program Overview and Considerations
- SR 509 Scenario Updates and Review
- SR 167 Scenario Updates and Review
- Review Cost Estimates
- Discuss Construction Staging and Grant Opportunities
- Conclusion and Next Steps

# Puget Sound Gateway Program Update

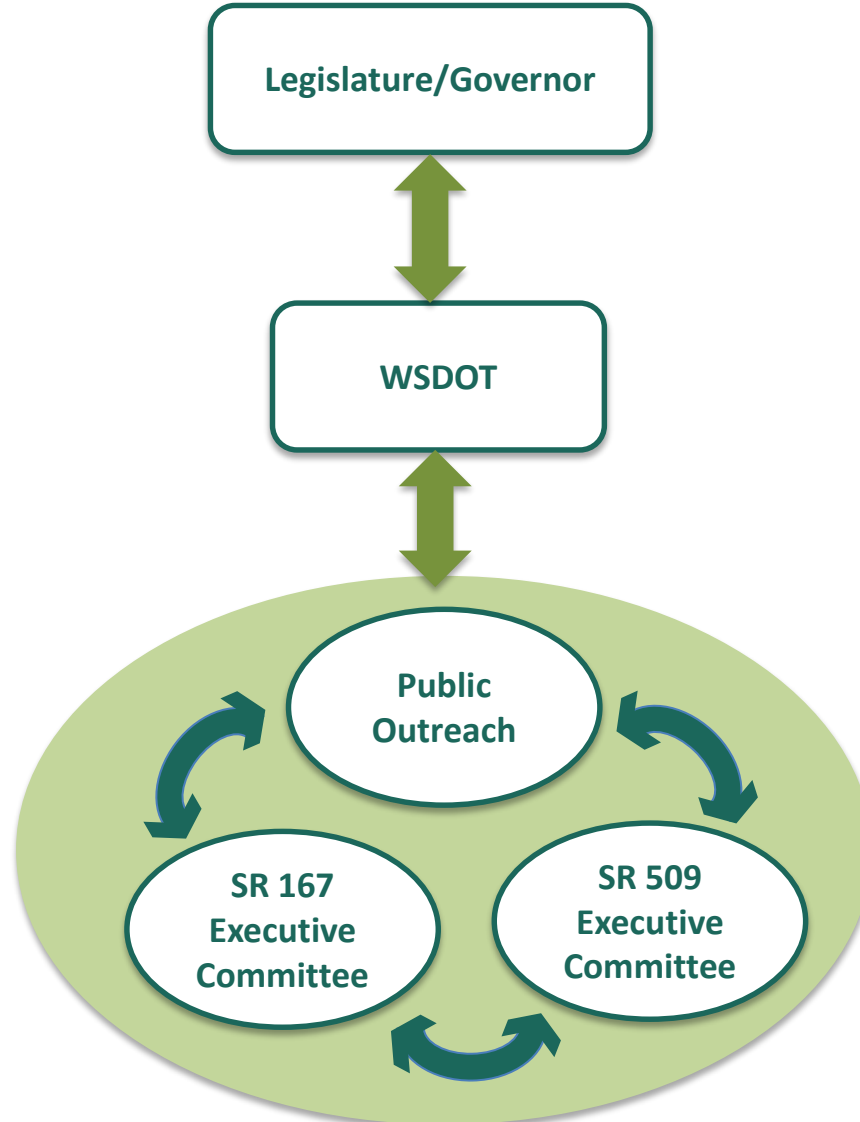
- Guiding Principles
- Review Schedule and Milestones
- Joint Executive Committee Meeting

# Legislative Direction

*In making budget allocations to the Puget Sound Gateway project, **the department shall implement the project's construction as a single corridor investment. The department shall develop a coordinated corridor construction and implementation plan for SR 167 and SR 509 in collaboration with affected stakeholders.***

*Specific funding allocations must be based on where and when specific project segments are ready for construction to move forward and investments can be best optimized for timely project completion. Emphasis must be placed on avoiding gaps in fund expenditures for either project.*

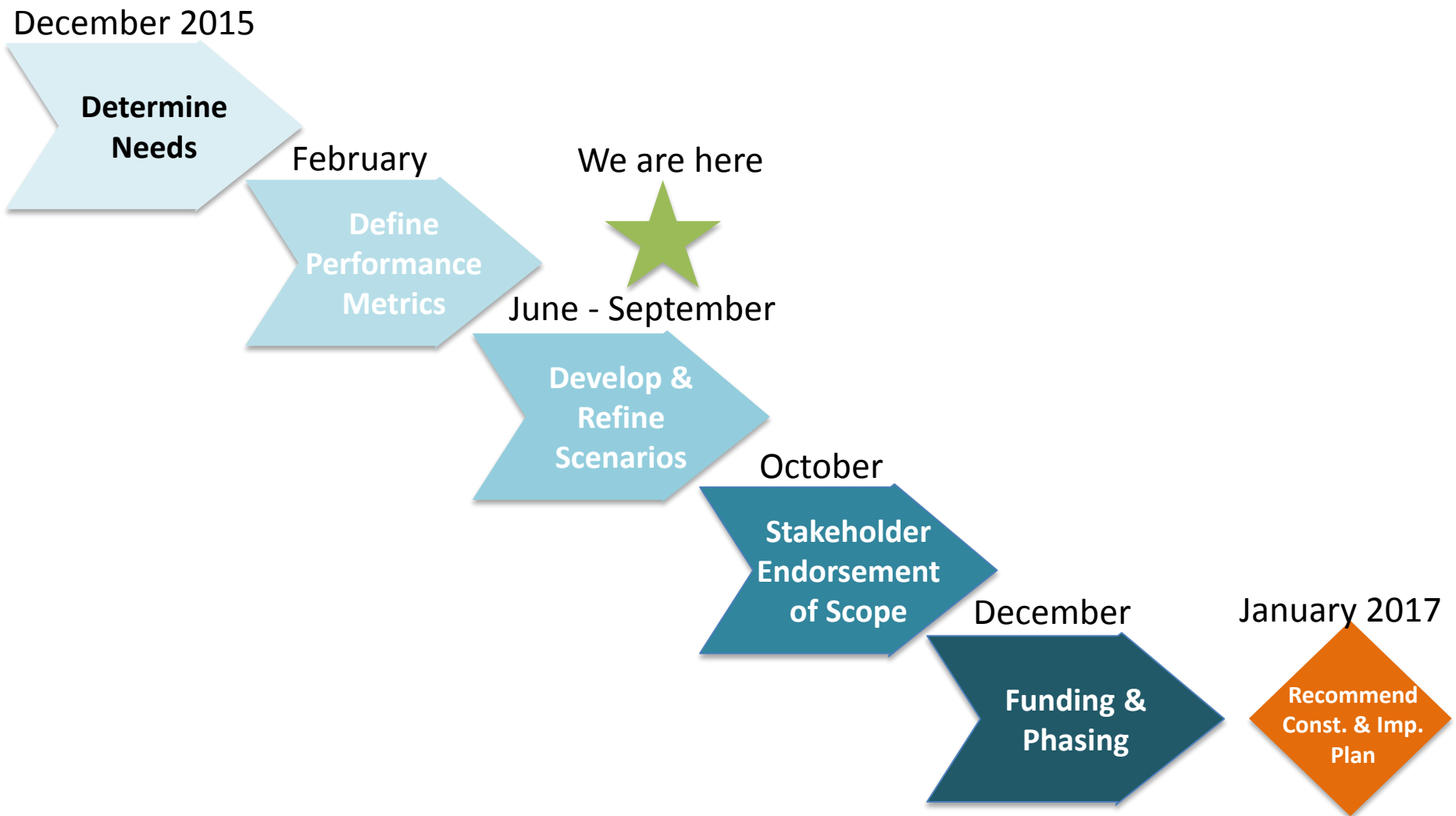
# Puget Sound Gateway Process



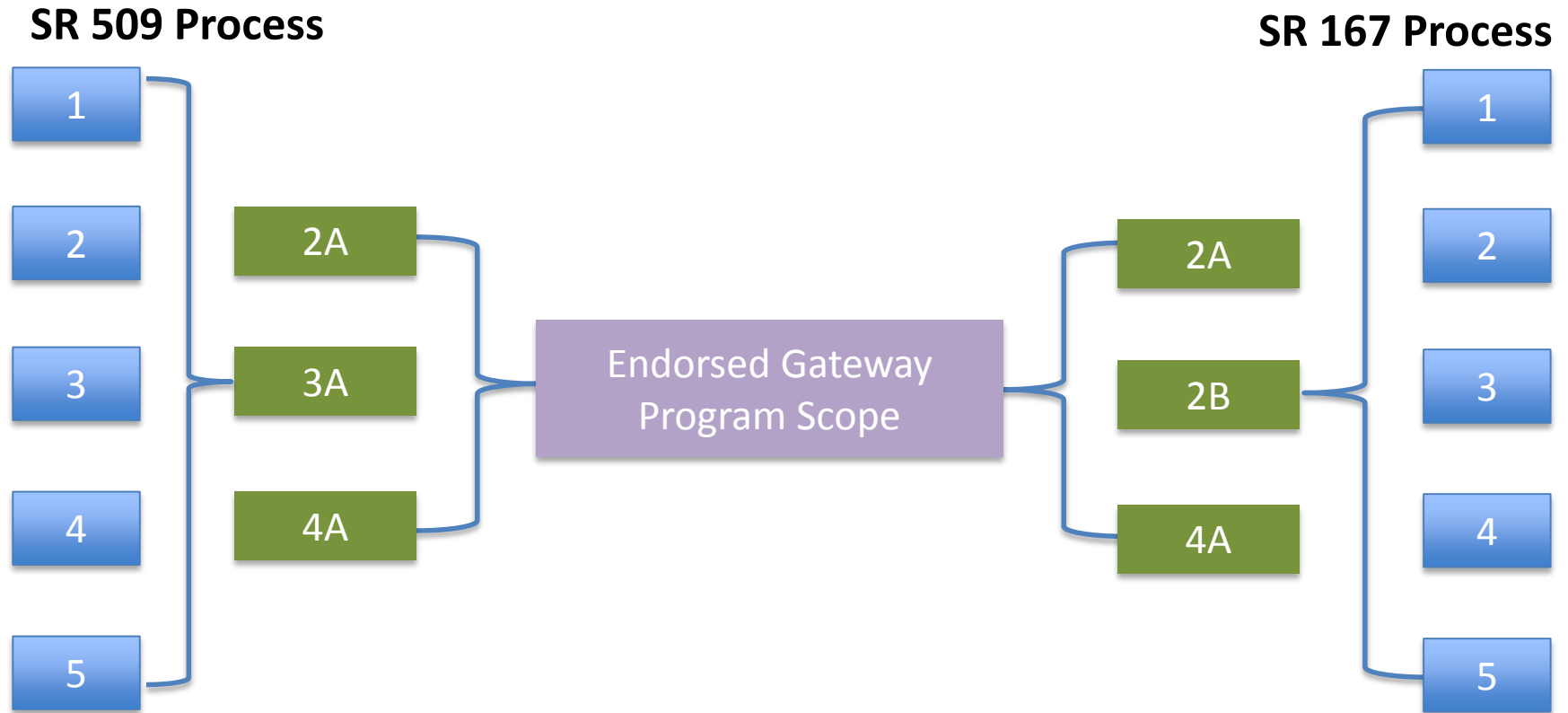
# Puget Sound Gateway Program Guiding Principles

1. Support regional mobility to provide efficient movement of freight and people
2. Improve local, regional, state and national economic vitality
3. Provide a high level of safety
4. Support local and regional comprehensive land use plans
5. Minimize environmental impacts and seek opportunities for meaningful improvements
6. Create solutions that are equitable, fiscally responsible, and allow for implementation over time
7. Support thoughtful community engagement and transparency

# Joint Steering Committee 2016 Work Plan



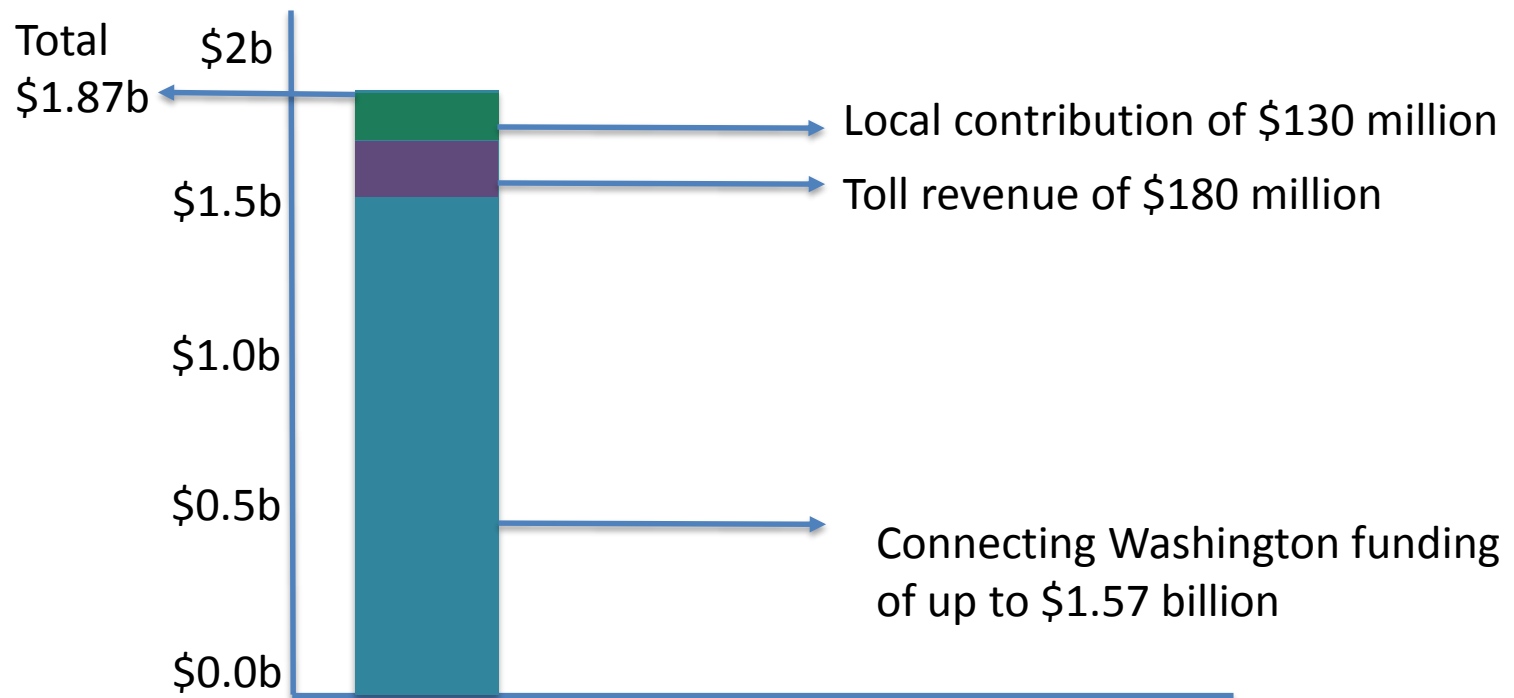
# Scenario Refinement Process



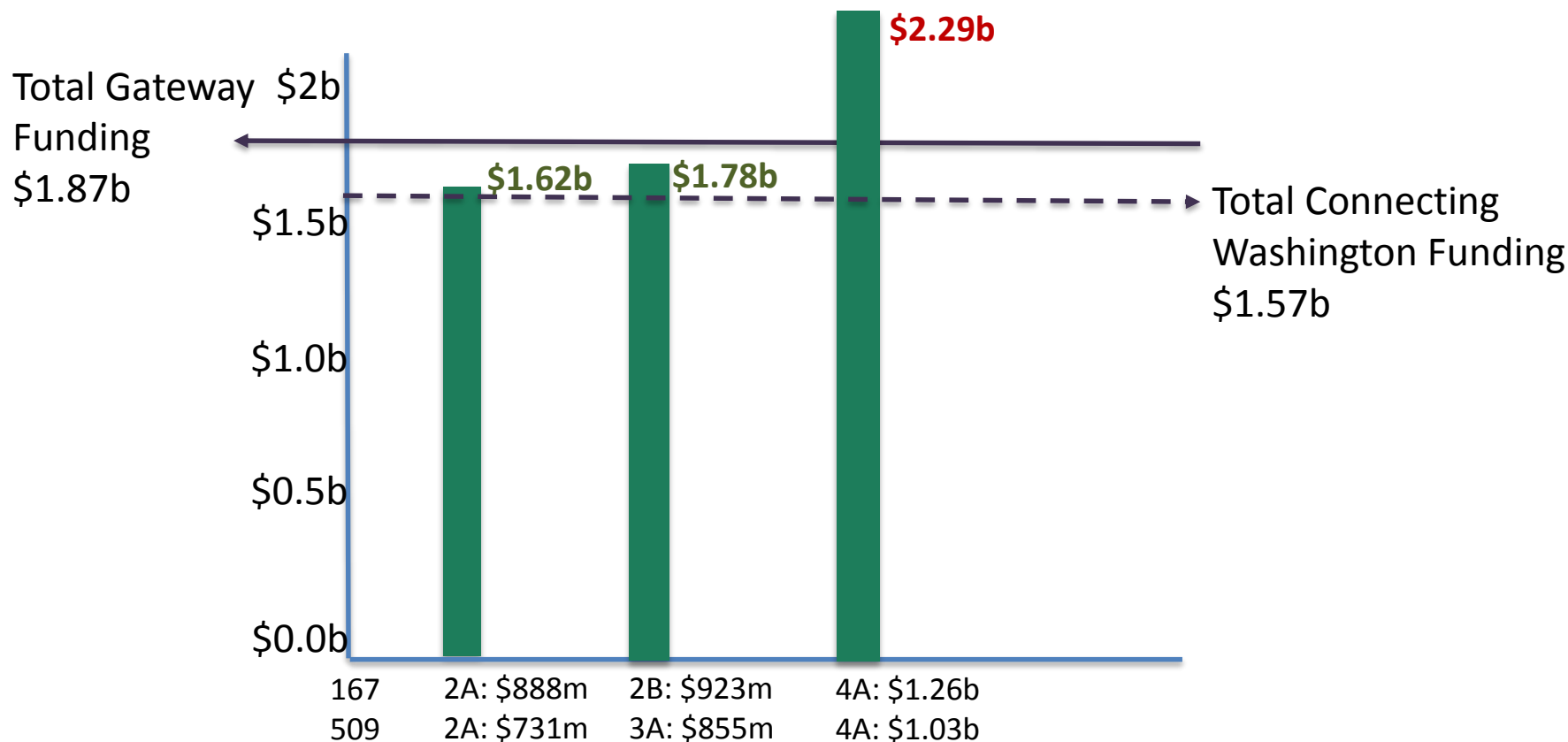


# Puget Sound Gateway Program

Total funding is \$1.87 billion; this amount assumes \$310 million local match and tolling revenue.



# Program Cost Estimates



# Key Questions

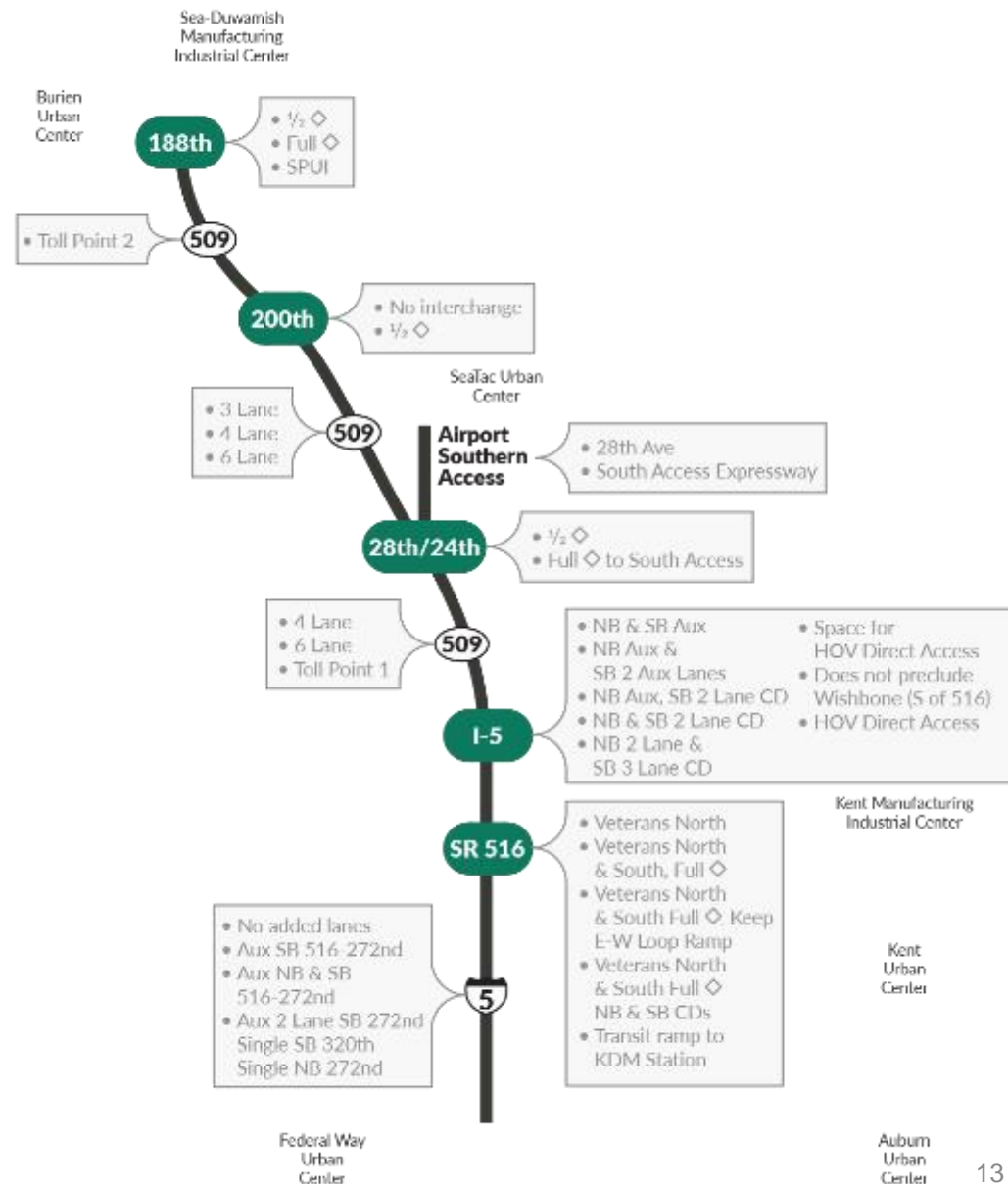
<b>Program Level</b>	<ol style="list-style-type: none"><li>1. How many lanes are included on SR 167 and SR 509?</li><li>2. What level of tolling is considered?</li><li>3. How are managed lanes considered and included?</li></ol>
<b>Project Level</b>	<ol style="list-style-type: none"><li>4. What degree of forward compatibility should be included in the design?</li><li>5. Degree of potential impact to I-5?</li><li>6. Where are connections most important?</li><li>7. How is south access to the airport accommodated? (SR 509)</li><li>8. How is access to the Port of Tacoma best accommodated? (SR 167)</li></ol>

# Program Key Questions

1. How many lanes are included on SR 167 and SR 509?
  - Four lanes
2. What level of tolling is considered?
  - Tolling will be part of the program for demand management and we recognize it will provide revenue.
3. How are managed lanes considered and included?
  - No freight lanes
  - No express toll lanes
  - No HOV lanes

# SR 509 Completion Project

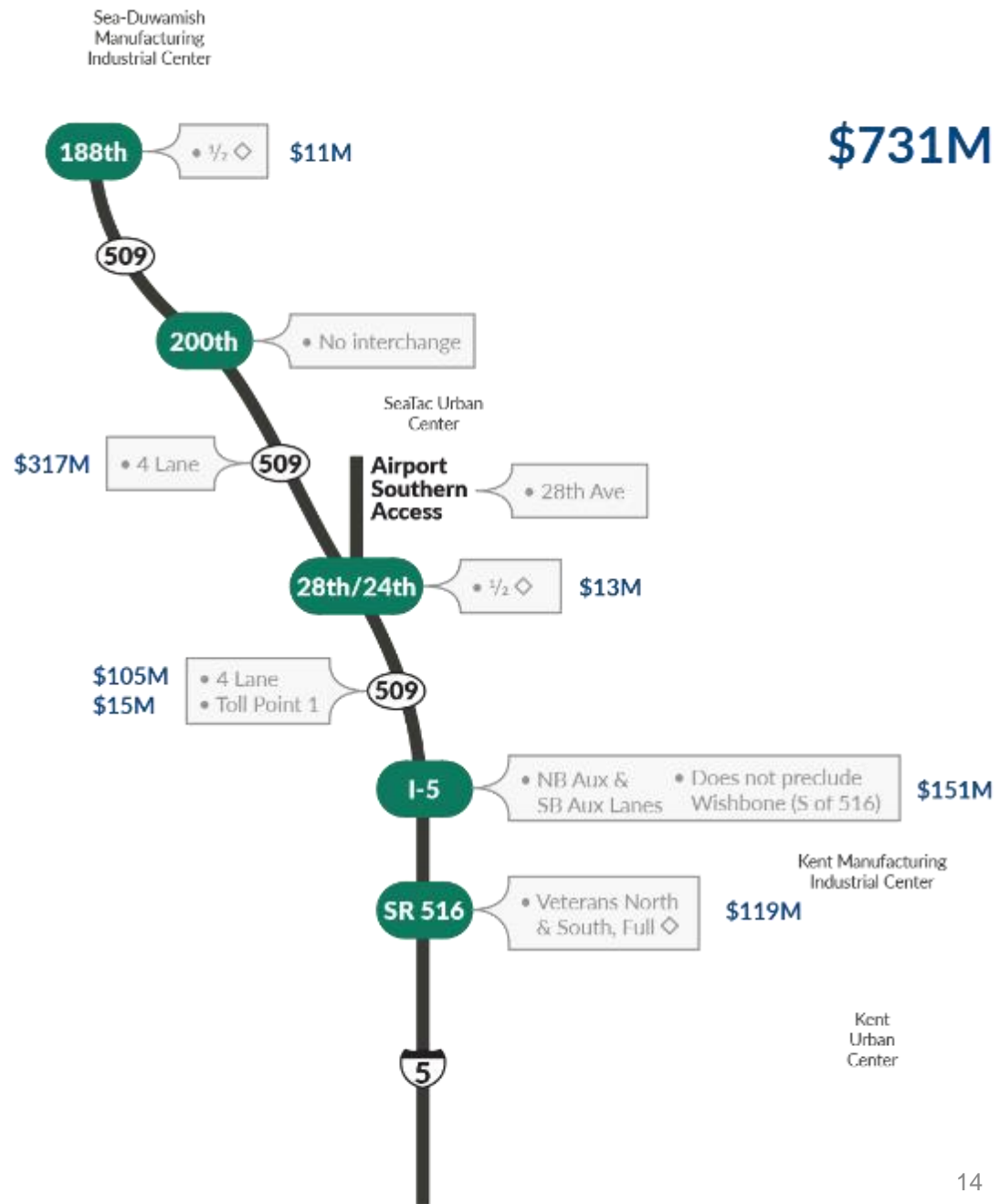
# SR 509



# Scenario 2A

## Changes from Scenario 2:

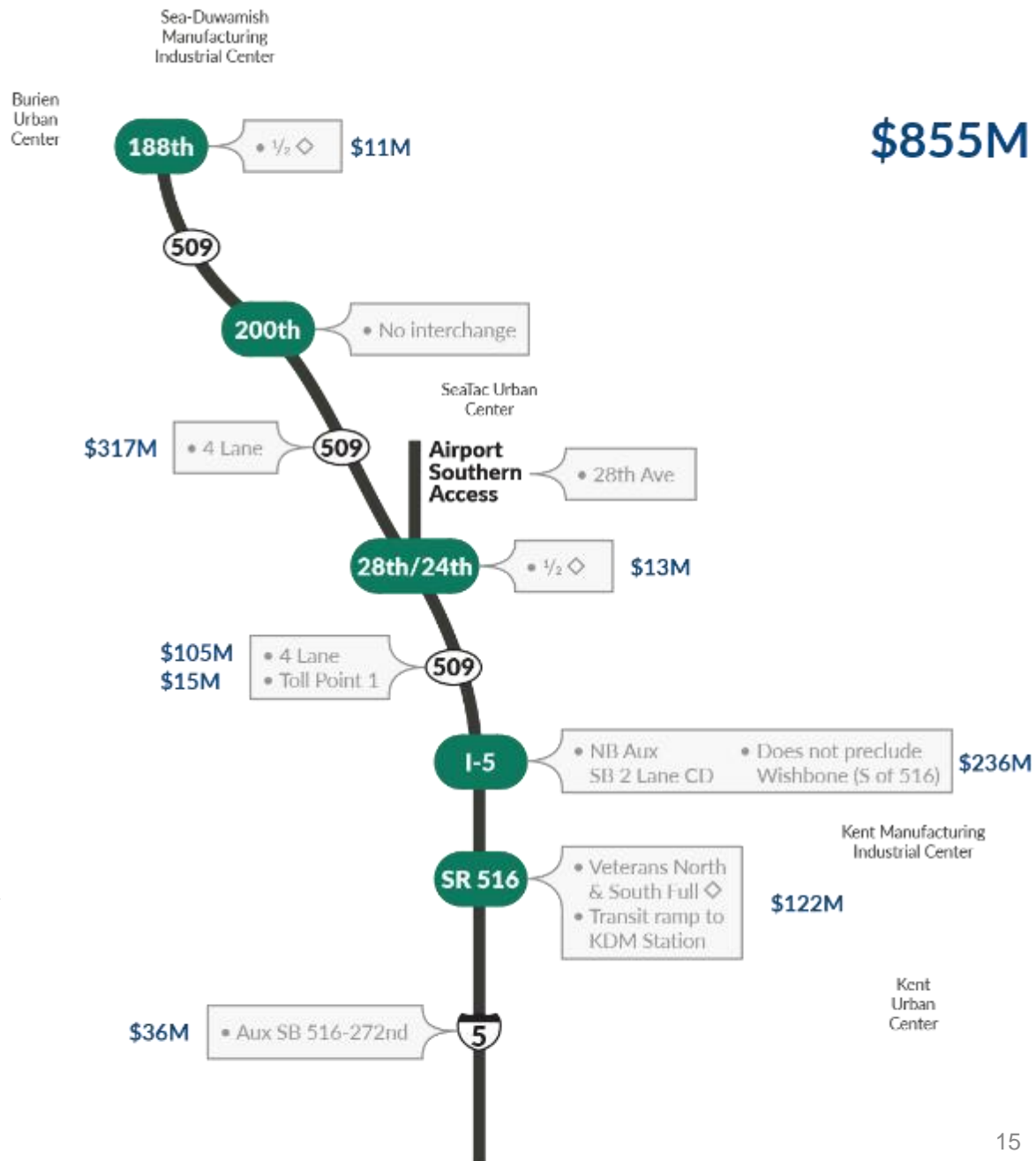
- SR 509: 4 lanes
- 188<sup>th</sup>: Half Diamond
- I-5/SR 509: 45 mph
- I-5 SB (SR 516 to SR 509): 1 auxiliary lane
- I-5 (SR 516 to SR 509): No accommodation of center to center HOV direct connector
- SB Auxiliary Lanes (South of SR 516: No auxiliary lane)



# Scenario 3A

## Changes from Scenario 3:

- SR 516:
  - Reconstruct interchange to a full diamond
  - At-grade intersection with Veterans Drive
  - Access to Veterans Drive to and from the north and south
- Includes direct access transit ramp to KDM Station from the SR 516 to SB I-5 on ramp. *(This was previously only in Scenario 4)*



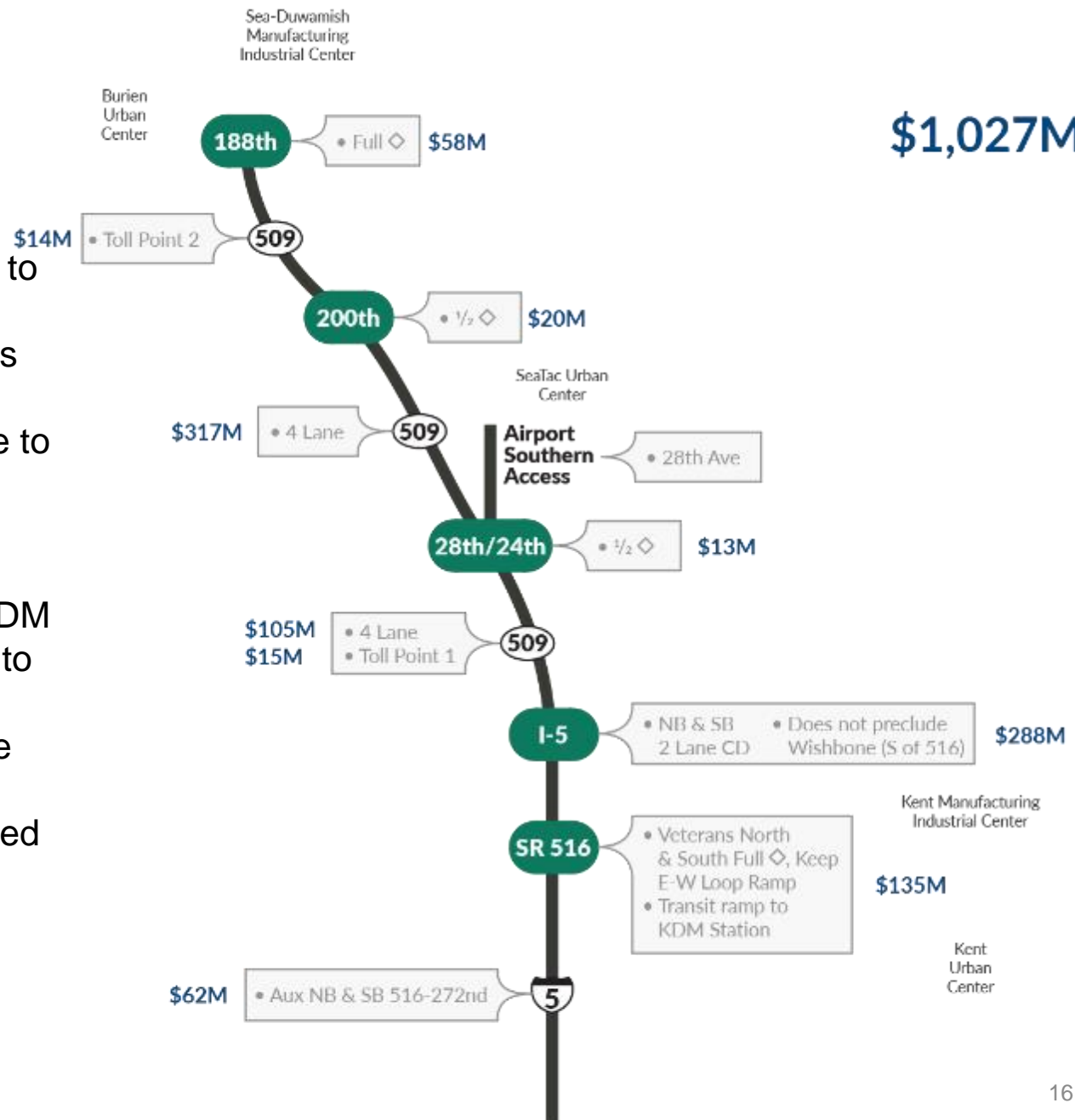


# Scenario 4A

**\$1,027M**

## Changes from Scenario 4

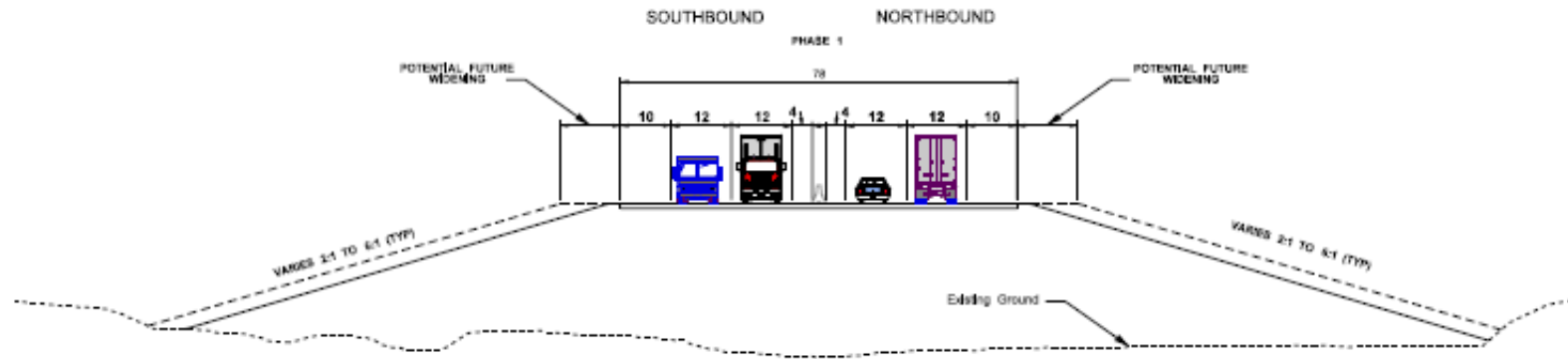
- SR 516:
  - Reconstruct interchange to a full diamond, at-grade intersection with Veterans Drive
  - Access to Veterans Drive to and from the north and south
  - Includes only the direct access transit ramp to KDM Station from the SR 516 to SB I-5 on ramp
  - Keeps SE loop ramp, like Scenario 4
  - Like 3, Scenario 4 included frontage road and grade separated NB onramp



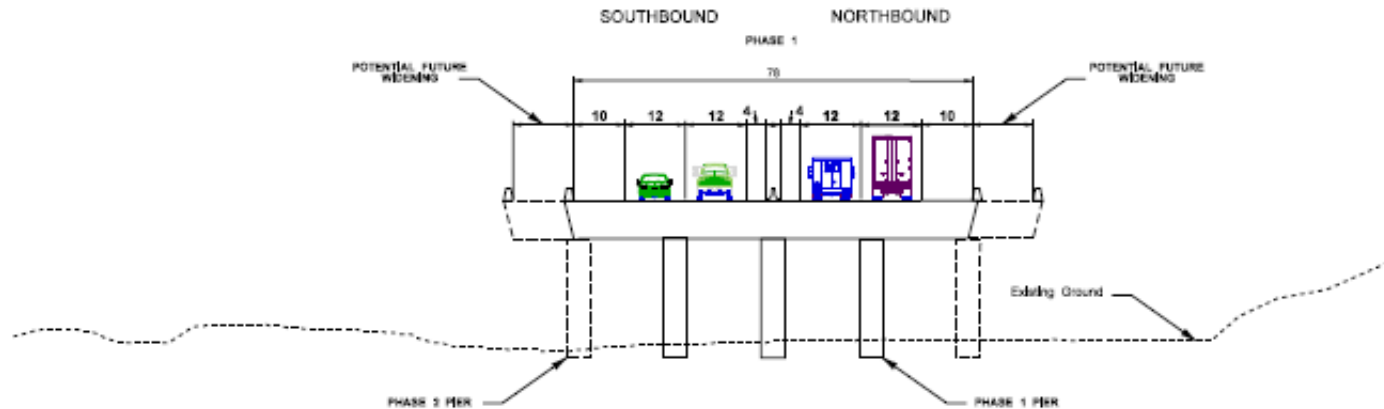
# Key Questions for Consideration on SR 509

Program Level	<ol style="list-style-type: none"><li>1. How many lanes are included on SR 509?</li><li>2. What level of tolling is considered?</li><li>3. How are managed lanes considered and included?</li></ol>
Project Level	<ol style="list-style-type: none"><li>4. <b>What degree of forward compatibility should be included in the design?</b></li><li>5. <b>Degree of potential impact to I-5?</b></li><li>6. <b>Where are connections most important?</b></li><li>7. How is south access to the airport accommodated?</li></ol>

# SR 509 Single Roadway Prism

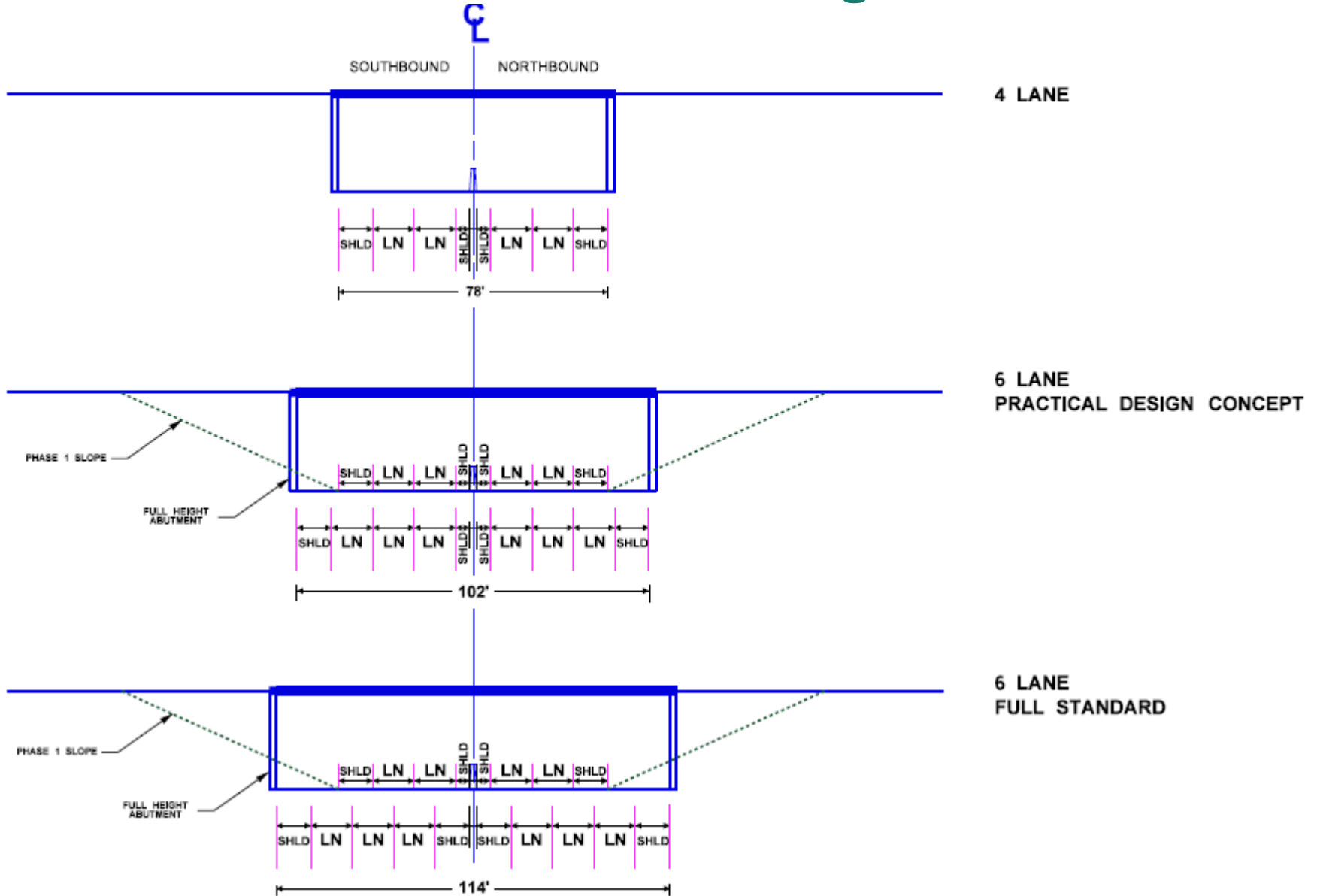


EMBANKMENT SECTION



BRIDGE SECTION

# SR 509 Section at Undercrossing



# Key Questions for Consideration on SR 509

4. What degree of forward compatibility should be included in the design?

Forward Compatibility			
Options	SR 509 structures and walls constructed to only accommodate 4 lane facility	SR 509 structures and walls constructed to accommodate 6 lane practical design facility	Structures and walls constructed to accommodate full standard 6 lane facility
Phase 1 Cost	Baseline	\$10m	\$15m

# Key Questions for Consideration on SR 509

4. What degree of forward compatibility should be included in the design?

Forward Compatibility as it Relates to Right of Way				
Options	Buys only right of way needed for Scenario 2A	Buys only right of way needed for Scenario 3A	Buys only right of way needed for Scenario 4A	Buys EIS right of way footprint
Cost	\$129m	\$150m	\$166m	\$173m

# Key Questions for Consideration on SR 509

## 5. Degree of potential impact to I-5?

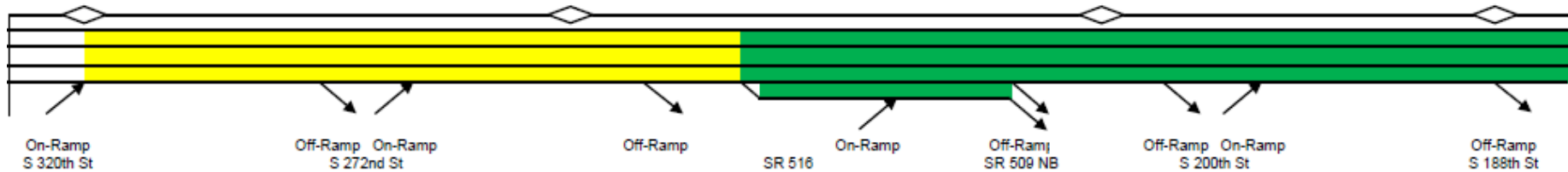
- A DTA (mesoscopic) model is being developed to assess system-wide impacts to I-5 operations
- Preliminary assessment of I-5 impacts using Highway Capacity Manual tools for fatal flaw analysis
  - Peak period, peak direction assessment for year 2045
  - Performance metric is whether I-5 is harmed, or not

# Key Questions for Consideration on SR 509

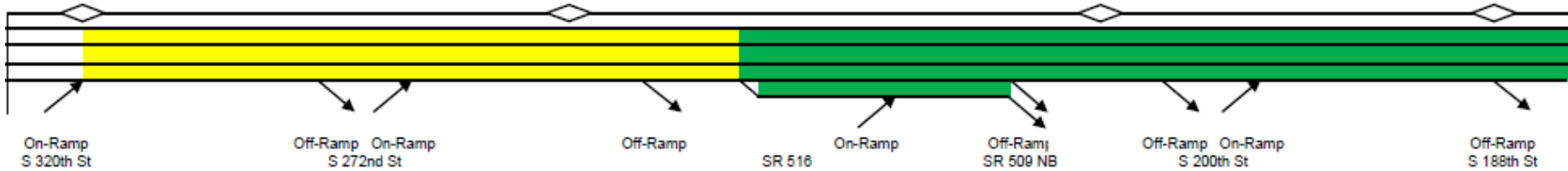
## 5. Degree of potential impact to I-5?

All Sections LOS F In No Build  
LOS Improves from No Build  
LOS Similar to No Build  
LOS Worse than No Build

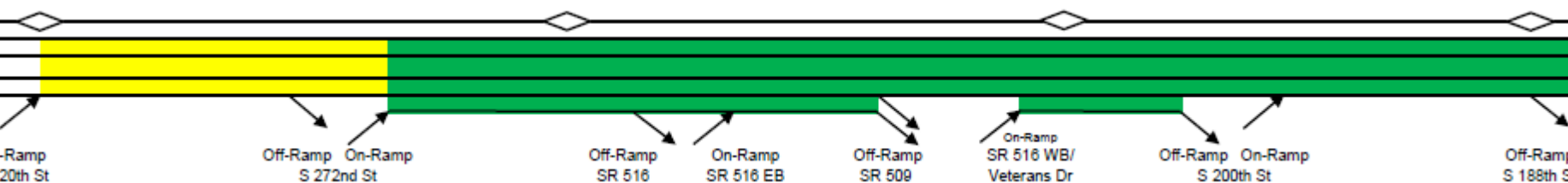
Northbound AM 2045: 2A



Northbound AM 2045: 3A



Northbound AM 2045: 4A





# Key Questions for Consideration on SR 509

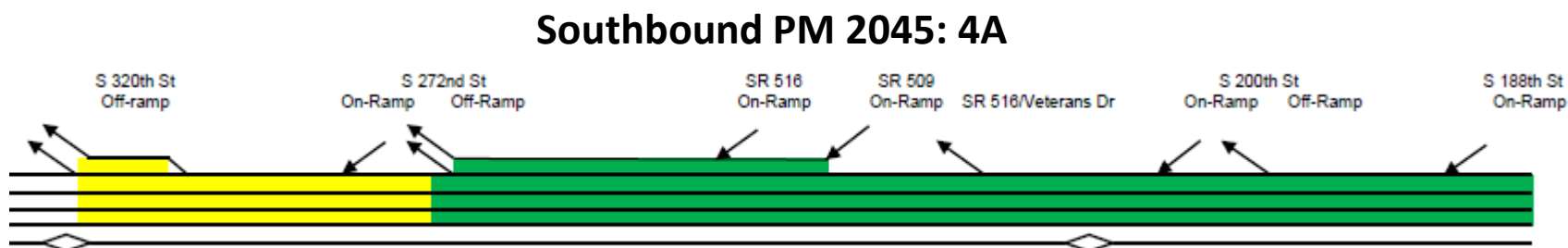
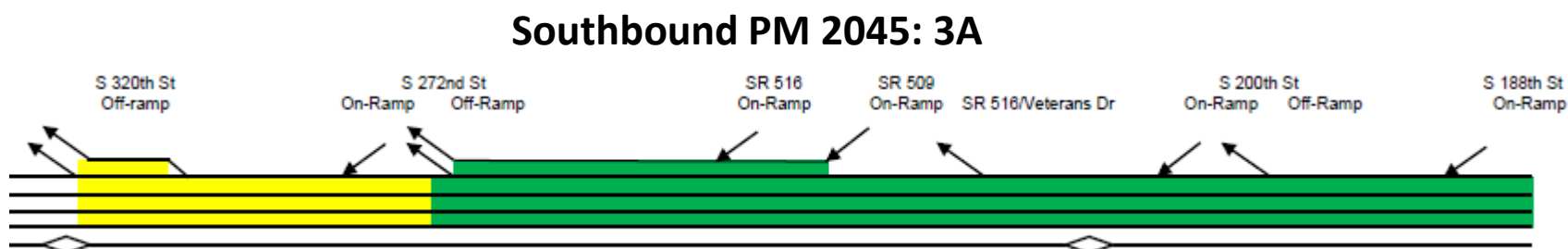
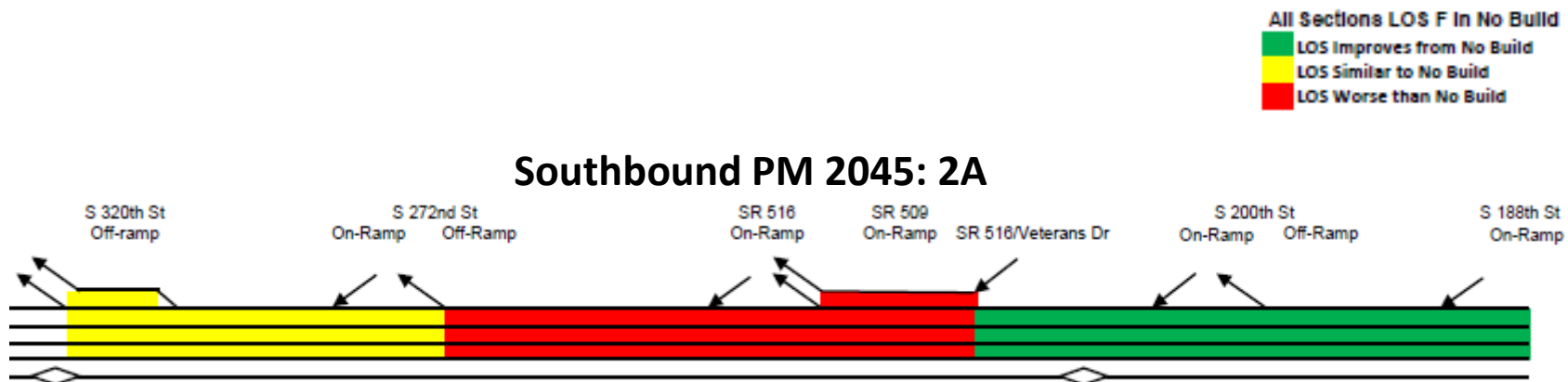
## 5. Degree of potential impact to I-5?

### NB I-5 Improvements needed to reach no harm to I-5 (SR 509 to SR 516 portion)

Options	NB Aux	NB 2 Lane CD
I-5 Performance	Good	Good
Cost	\$97m	\$149m

## Key Questions for Consideration on SR 509

5. Degree of potential impact to I-5?



# Key Questions for Consideration on SR 509

## SB I-5 Improvements needed to reach no harm to I-5 (SR 509 to SR 516)

Options	SB Aux	SB 2 Aux	SB 2 Lane CD	SB 3 Lane CD
I-5 Performance	Poor	Poor	Good	Good
Cost	\$54m	\$82m	\$139m	\$310m

# Key Questions for Consideration on SR 509

## 5. Degree of potential impact to I-5?

### SB I-5 Improvements needed to reach no harm to I-5 (South of SR 516 portion)

Options	No SB Aux Lane SR 516 to S 272nd St	Single lane SB Aux Lane SR 516 to S 272nd St	Dual SB Aux Lane SR 516 to S 272nd St
Metric: I-5 Performance, Target: No Harm	Poor	Good	Good
Cost	\$0m	\$36m	\$71m

# Key Questions for Consideration on SR 509

## 6. Where are connections most important?

S 188 ST Interchange Configuration				
Options	Full Diamond	Half Diamond/Do not preclude Full Diamond	SPUI	Half SPUI/Do not preclude Full SPUI
Interchange Performance	Good	Good	Good	Good
SR 509 Performance	Good	Good	Good	Good
Support Local and Regional Comprehensive land use planning and development	Very Good	Moderate	Very Good	Moderate
Cost	\$58m	\$11m	\$53m	\$32m

# Key Questions for Consideration on SR 509

## 6. Where are connections most important?

S 200 ST Interchange Configuration		
Options	Do not preclude a Half Diamond connection	Half Diamond
Interchange Performance	Good	Good
SR 509 Performance	Good	Good
Support Local and Regional Comprehensive land use planning and development	Fair	Very Good
Cost	\$0m	\$20m

# Key Questions for Consideration on SR 509

## 6. Where are connections most important?

### SR 516 to SB I-5 On Ramp KDM Station Slip ramp connection (transit only)

Options	No Slip ramp connection to KDM	With "in" connection to KDM	With "out" connection to KDM
Interchange Performance	Good	Good	Good
Support Multimodal Choices to SeaTac Airport and KDM Link Light Rail Station	Moderate Interchange travel time slightly better than no build	Very Good 3-5 minute travel time savings	Good 2-4 minute travel time savings
Cost	\$0m	\$2m	\$4m

# Key Questions for Consideration on SR 509

## 6. Where are connections most important?

### SR 516/Veterans Drive Interchange

Options	Baseline with Partial Veterans	Parclo with Partial Veterans	Parclo/Frontage with Partial Veterans	Parclo/Frontage with Full veterans	Split Diamond with SE Loop	Split Diamond
Support Local and Regional Comprehensive land use planning and development	Moderate	Moderate	Good	Very Good	Very Good	Very Good
Operations	Moderate	Moderate	Moderate	Good	Very Good	Very Good
Reliability	Moderate	Moderate	Moderate	Good	Good	Good
Reduce pedestrian vehicle exposure	Moderate	Good	Good	Good	Good	Good
Cost	\$130m	\$131m	\$136m	\$152m	\$135m	\$122m



# Key Questions for Consideration on SR 509

## 6. Where are connections most important?

- Highest priority is SR 516 for the following reasons:
  - Connects two state highways – prioritizes functionality
  - Veterans Drive plays a crucial role in keeping the entire system working
- 188<sup>th</sup>, 200<sup>th</sup>, and KDM slip ramps have a lesser degree of significance to overall operations

# Key Questions for Consideration on SR 509

7. How is south access to the Airport accommodated?

- Provide interim south access via 28th/24th.
- The project will accommodate a future South Access Expressway.

# Additional Steering Committee Question

What are target speeds on the I-5/SR 509 Interchange ramps?

I-5/SR 509 Ramp Connection Target Speed		
Options	45 MPH	60 MPH
Centers and airport travel time and reliability	48 seconds	32 seconds
Number ROW parcels impacted	11	30
Cost	\$239m	\$239m

# SR 509 Performance Evaluation Results

Performance Category	Essential Performance Metrics									Contextual Performance Metrics							Cost
	Mobility						Economic Vitality	Safety	Safety	Mobility			Env't	Other			
Mode	Auto / Freight	HOV / BUS	Freight / Auto / Transit	Freight / Auto / Transit	Freight / Auto / Transit	Freight / Auto / Transit	Freight / Auto / Transit	Freight / Auto / Transit					Ped	Ped & Bike			
Performance METRIC	SCENARIO																
No Build																	
Scenario 2A - Limited Connectivity																	
Scenario 3A - Moderate Connectivity																	
Scenario 4A - Full Connectivity																	

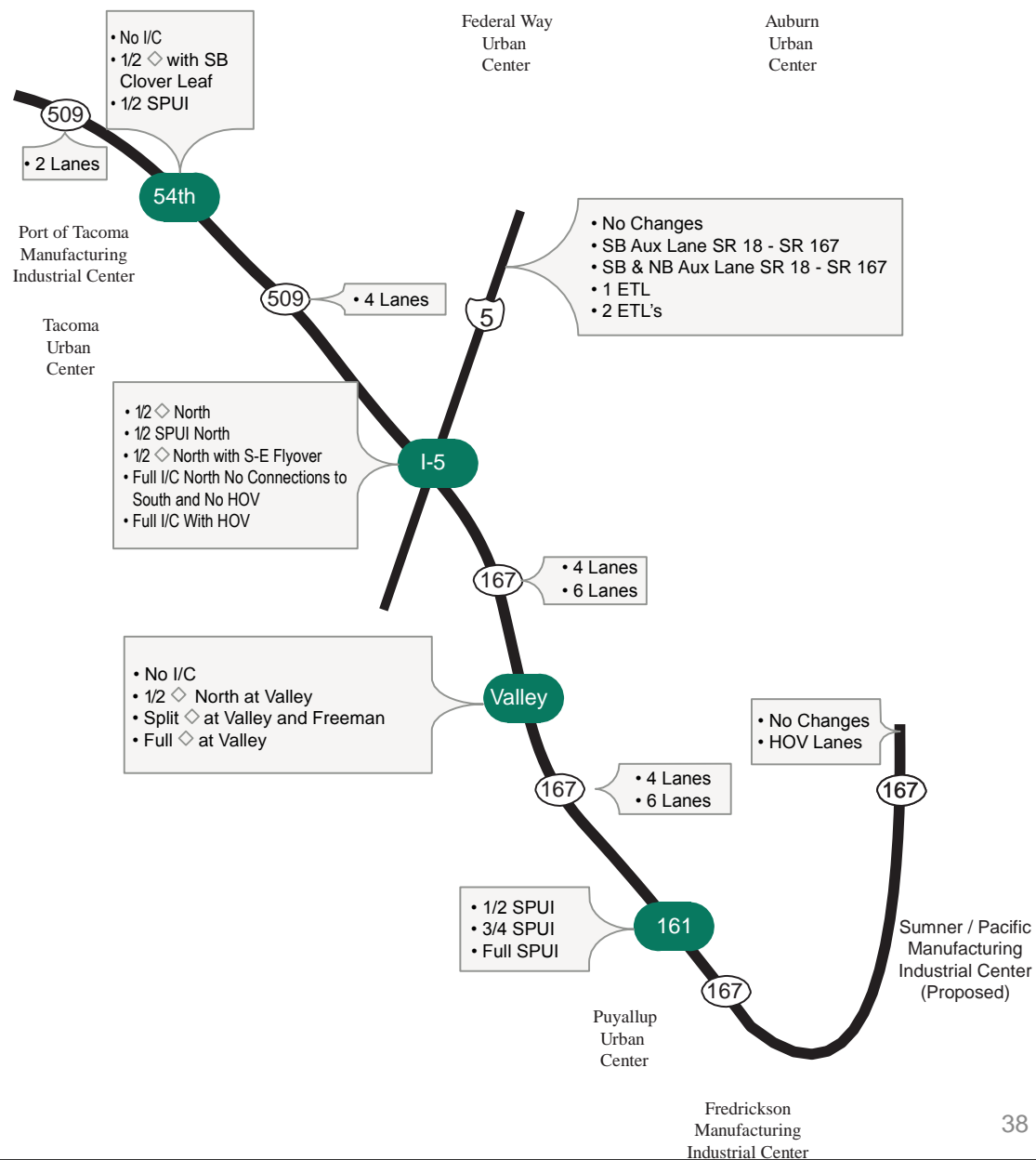
# Performance Evaluation Results – Key Takeaways

- Scenario 2A rated poor for I-5 performance, showing it doesn't meet an essential need.
- Scenarios 3A and 4A score similarly – recommend moving these two scenarios forward for mesoscopic modeling

# SR 167 Completion Project

# SR 167

- Range from “Closing the Gap” to “Full-Build Out +”



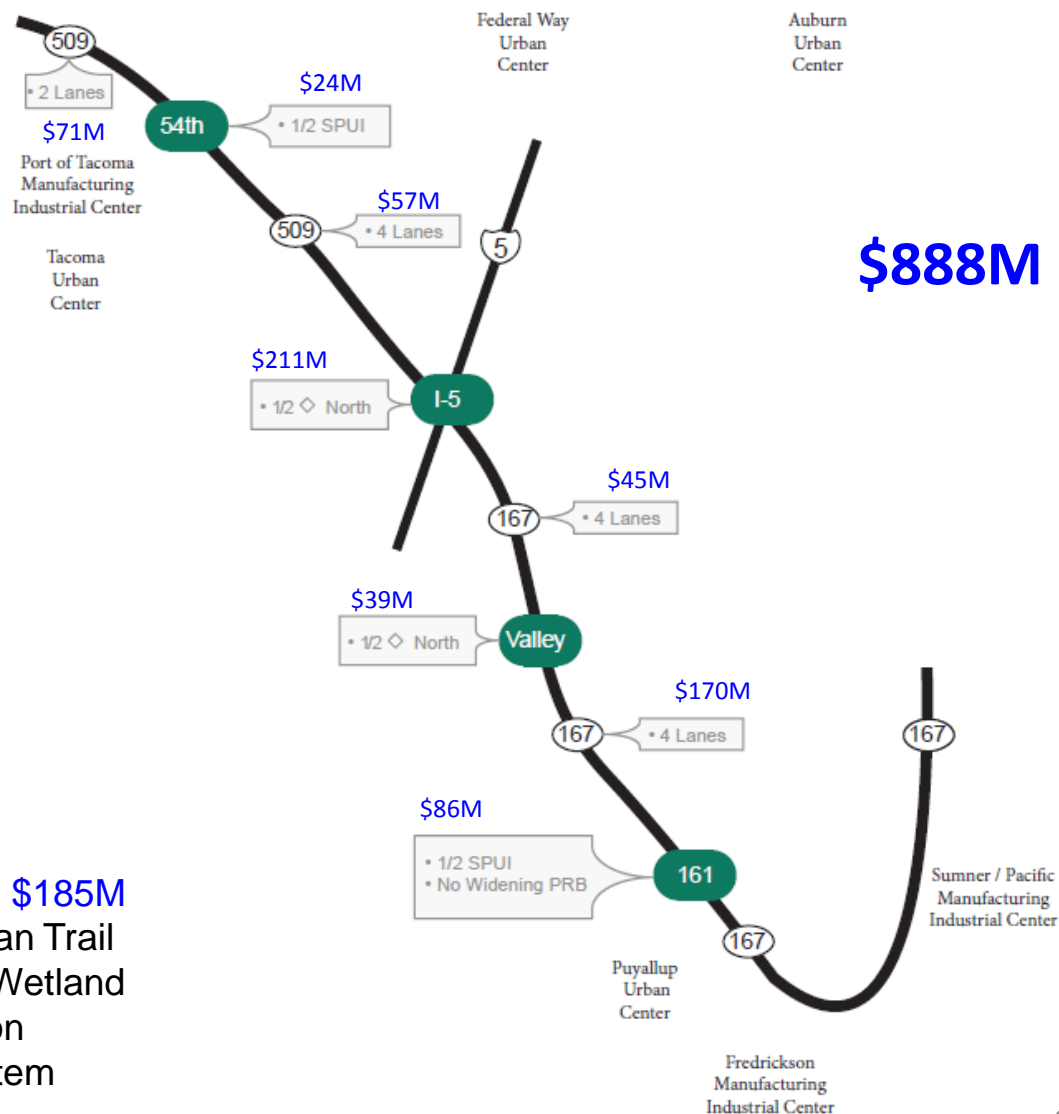
# Scenario 2A: Limited I-5 Connectivity

## Changes from Scenario 2

- $\frac{1}{2}$  SPUI at I-5 replaced with  $\frac{1}{2}$  diamond I/C to the north
- $\frac{3}{4}$  SPUI at Meridian reduced to  $\frac{1}{2}$  SPUI (rebuild existing)

Other Items Total **\$185M**

- Interurban Trail
- RRP & Wetland Mitigation
- Toll System





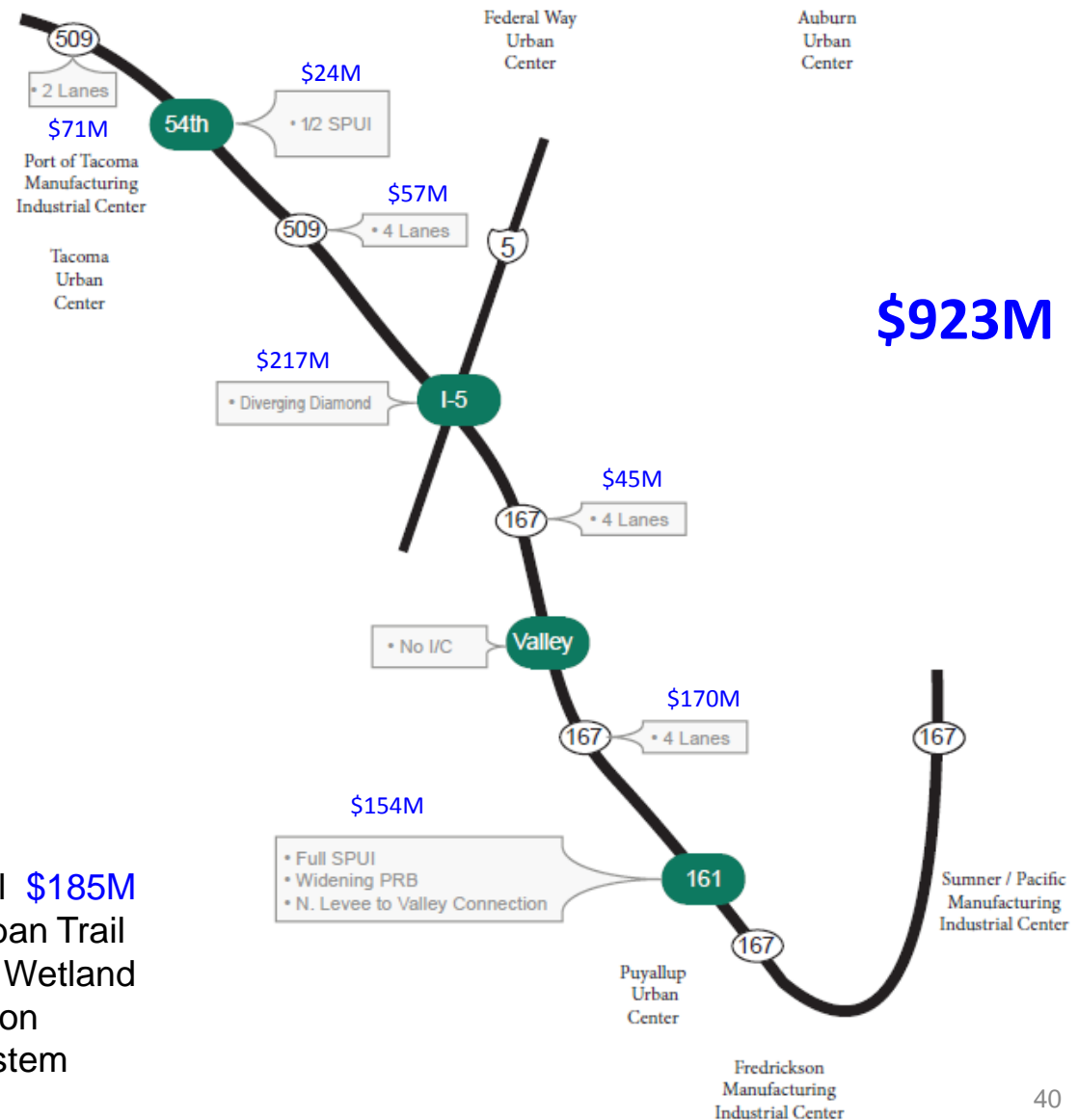
# Scenario 2B: Full Connectivity at I-5 & Meridian

## Changes from Scenario 2

- ½ SPUI at I-5 replaced with Diverging Diamond I/C
- ½ diamond at Valley Ave removed, No I/C
- ¾ SPUI at Meridian replaced with Full SPUI
- Widen NB Puyallup River bridge to 5 lanes
- N. Levee Rd to Valley connection

Other Items Total **\$185M**

- Interurban Trail
- RRP & Wetland Mitigation
- Toll System



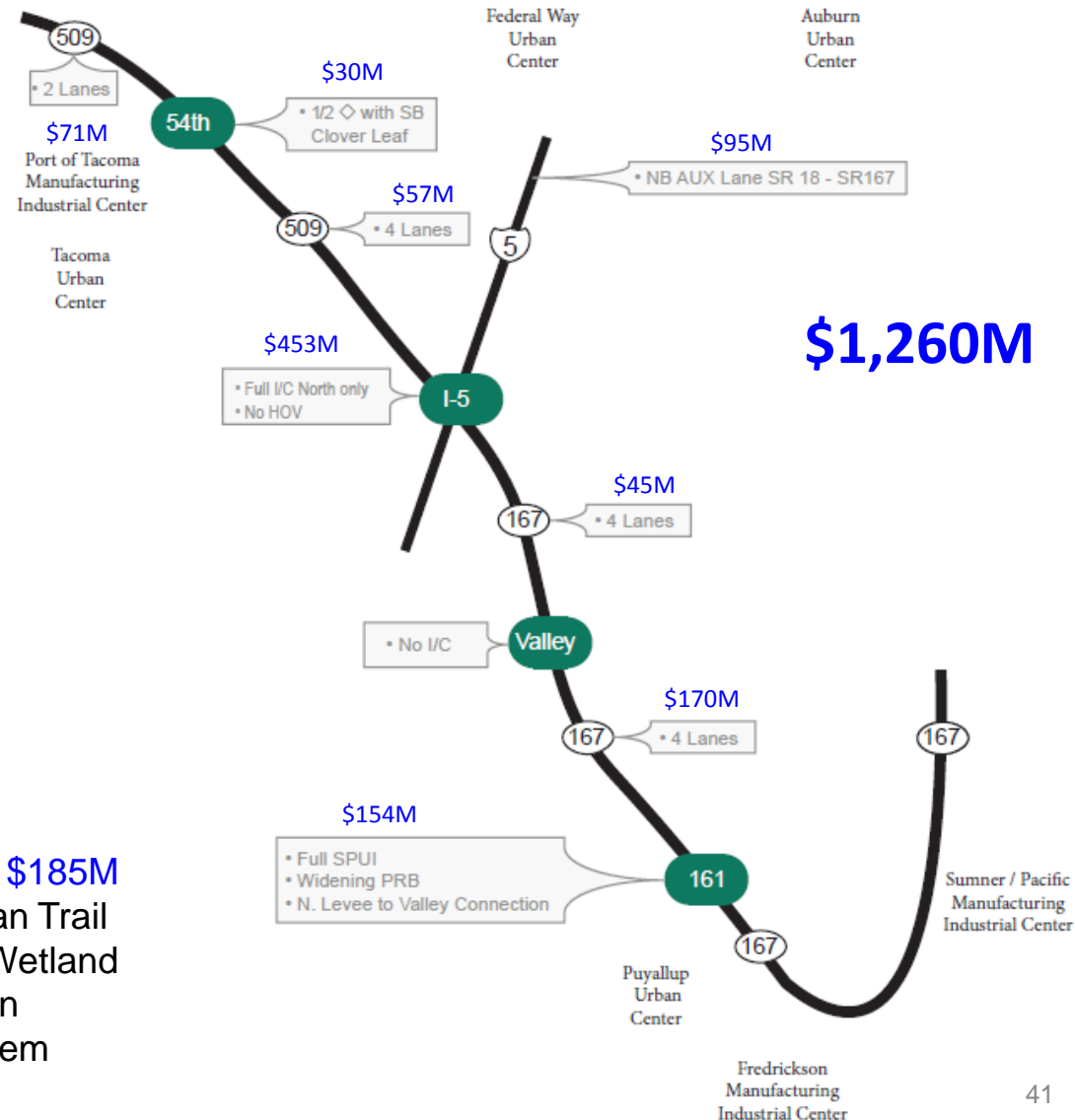
# Scenario 4A: Moderate Connectivity at I-5 with Full Meridian Connectivity

## Changes from Scenario 4

- SB I-5 auxiliary lane replaced with NB
- Full diamond I/C at Valley removed, No I/C
- SB 167 HOV lane removed

Other Items Total **\$185M**

- Interurban Trail
- RRP & Wetland Mitigation
- Toll System



# Key Questions for Consideration on SR 167

Program Level	<ol style="list-style-type: none"><li>1. How many lanes are included on SR 167?</li><li>2. What level of tolling is considered?</li><li>3. How are managed lanes considered and included?</li></ol>
Project Level	<ol style="list-style-type: none"><li>4. <b>What degree of forward compatibility should be included in the design?</b></li><li>5. <b>Degree of potential impact to I-5?</b></li><li>6. Where are connections most important?</li><li>8. <b>How is access to the Port of Tacoma best accommodated?</b></li></ol>

# Key Questions for Consideration on SR 167

4. What degree of forward compatibility should be included in the design?
  - Construct initial narrower project footprint
  - Plan for full build out
  - Right of way acquisition for remainder of corridor
  - Cost estimates on options to be provided at next Steering Committee Meeting

# Key Questions for Consideration on SR 167

4. What degree of forward compatibility should be included in the design?

Forward Compatibility				
Options	Single roadway prism with embankment & structures for a 4 lane facility to not preclude 6 lane facility	Single roadway prism with embankment & structures constructed to accommodate 6 lane facility	Dual roadway prism with embankment & structures for a 4 lane facility to not preclude 6 lane facility	Dual roadway prism with embankment & structures constructed to accommodate 6 lane facility
Cost Estimate	\$215m	\$280m	TBD	TBD

# Key Questions for Consideration on SR 167

4. What degree of forward compatibility should be included in the design?

Forward Compatibility as it Relates to Right of Way				
Options	Buys only what is needed for Scenario 2A	Buys only what is needed for Scenario 2B	Buys only what is needed for Scenario 4A	Buys Refined Alignment Footprint
Cost	\$110M	\$110M	\$115M	\$125M

# Key Questions for Consideration on SR 167

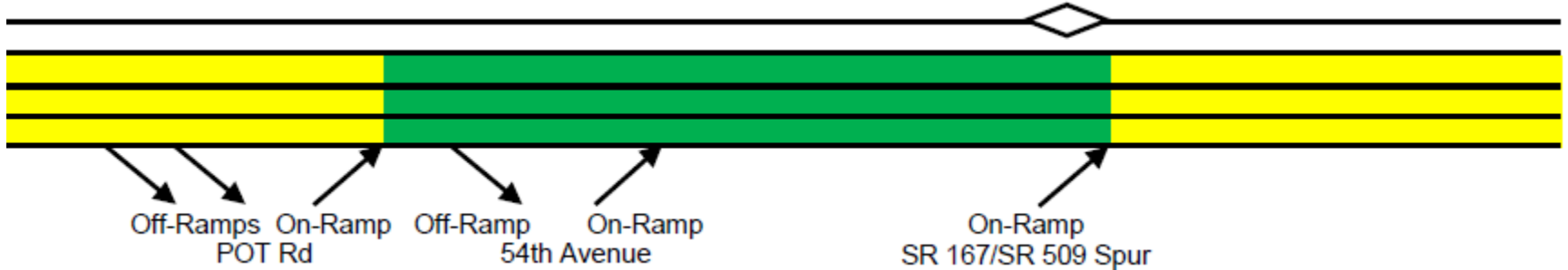
## 5. Degree of potential impact to I-5?

- Program target is to do no harm to I-5 operations

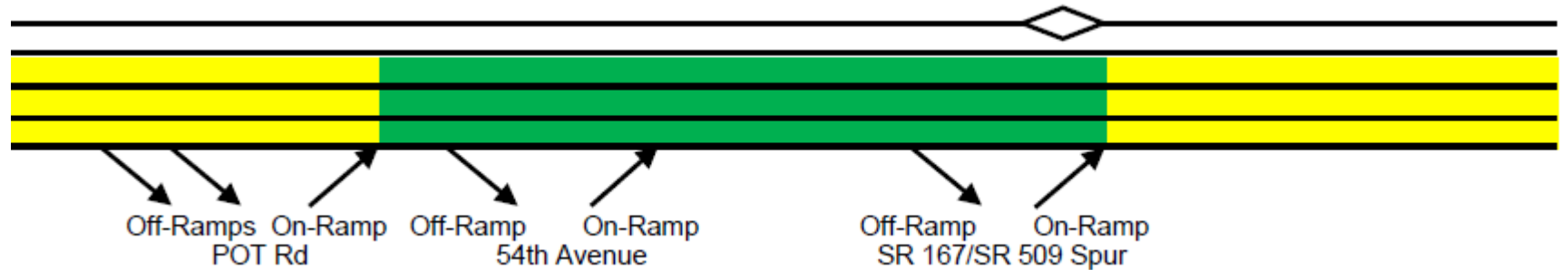
# Key Questions for Consideration on SR 167

All Sections LOS F In No Build  
LOS Improves from No Build  
LOS Similar to No Build  
LOS Worse than No Build

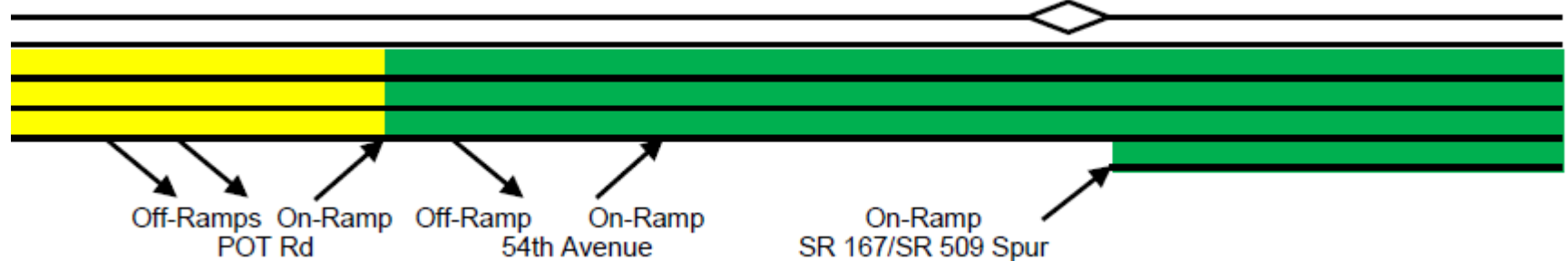
Northbound AM 2045: 2A



Northbound AM 2045: 2B



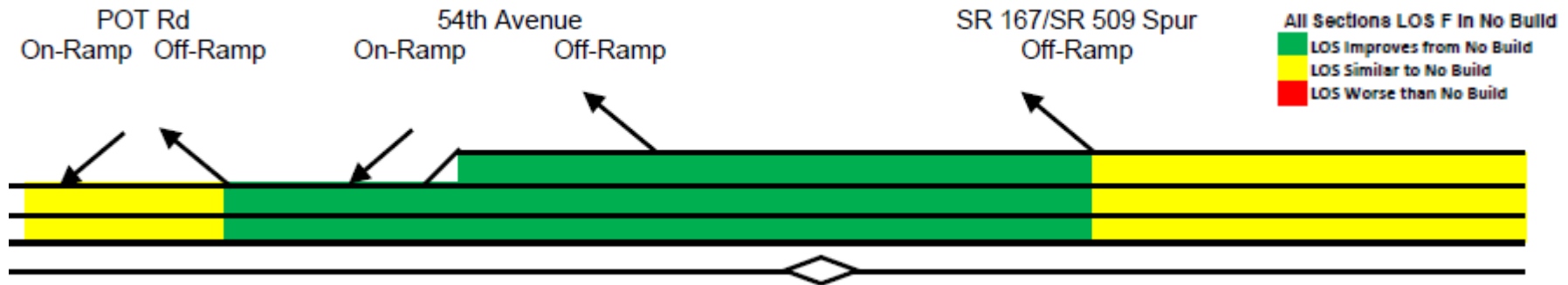
Northbound AM 2045: 4A



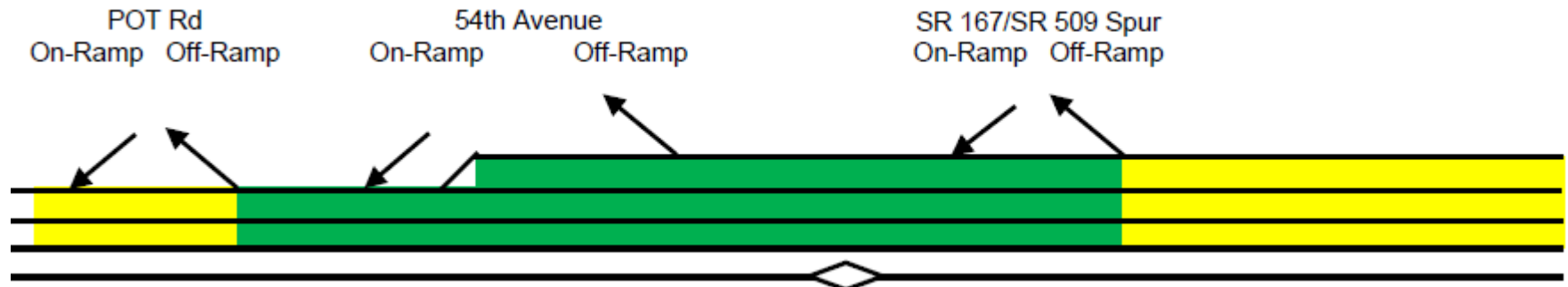


# Key Questions for Consideration on SR 167

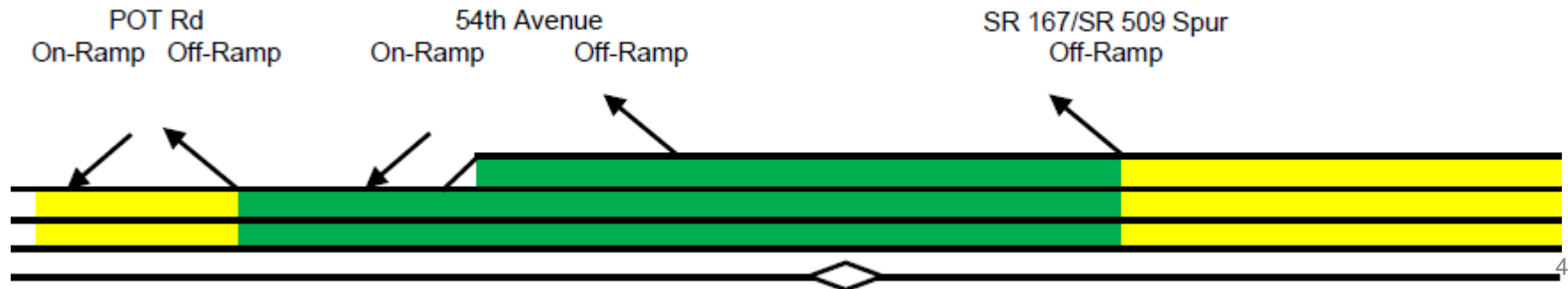
## Southbound PM 2045: 2A



## Southbound PM 2045: 2B



## Southbound PM 2045: 4A



# Key Questions for Consideration on SR 167

## 6. Where are connections most important?

- Highest priority connections are SR 161, I-5, SR 509 and 54<sup>th</sup> Avenue.

# Key Questions for Consideration on SR 167
































































































## 8. How is access to the Port of Tacoma best accommodated?

- The Project team needs to understand the distribution of truck traffic into, and out of, the Port of Tacoma between Taylor Way, Alexander Avenue, Port of Tacoma Road, and I-705.
- This issue will be pursued as we gather additional truck origin & destination data.

# SR 167 Performance Evaluation Results

Scenario Comparison Table - SR 167 Completion Project

Date: 9/13/16

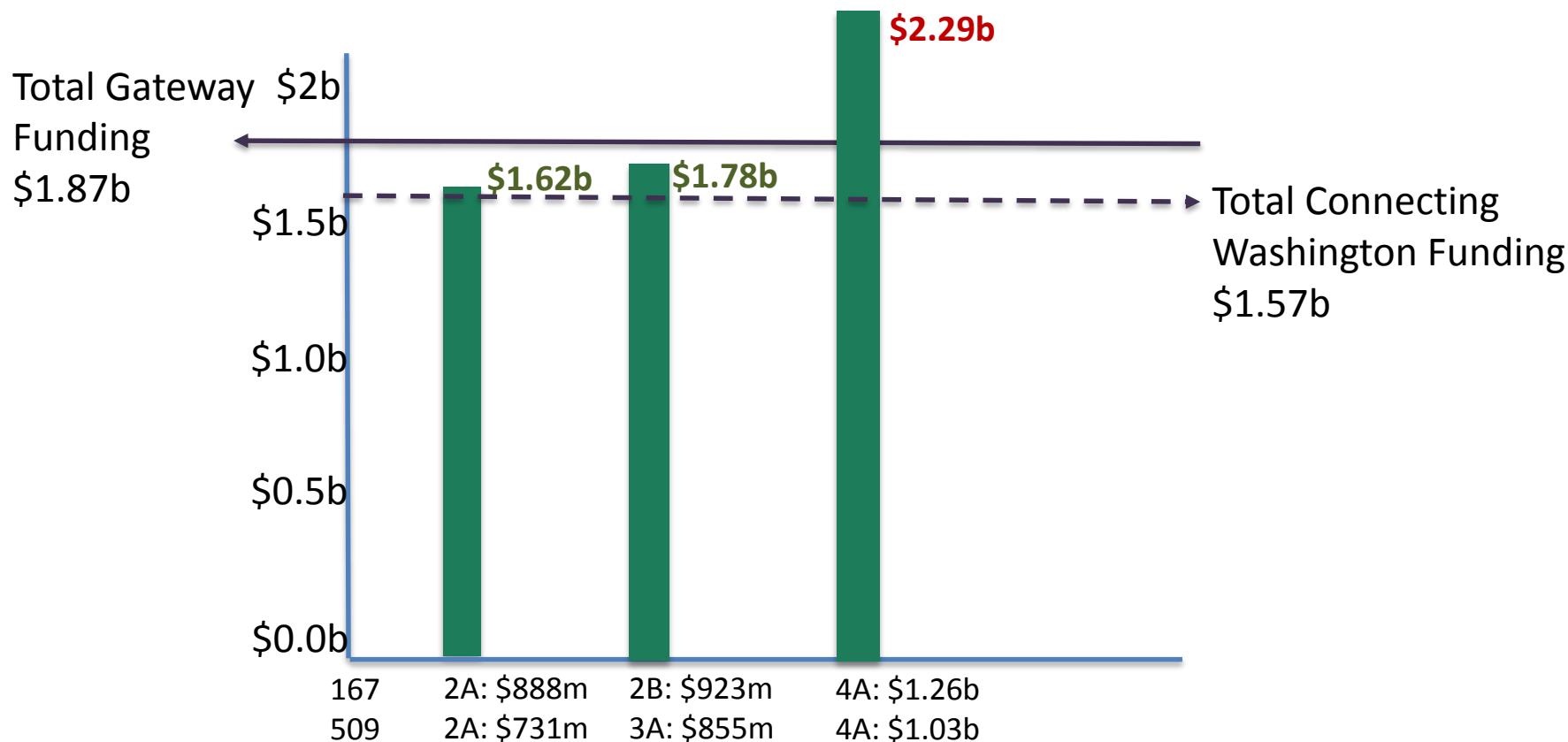
Performance Category 	Baseline Performance Metrics													Contextual Performance Metrics								Cost	
	Mobility										Economic Vitality			Safety	Safety	Active Mobility			Env't	Other			
Mode 	Auto / Freight	HOV / Bus	Auto / Freight	HOV/Bus	Auto / Freight	HOV / Bus	Auto / Freight	HOV / Bus	Auto / Freight	HOV / Bus		Auto / Freight	HOV / Bus			Pod	Bike	Pod	Bike				
Performance METRIC 	SR 167 Performance Maintain or Improve SR 167 Operations between SR 161 and I-5		SR 509 Spur Performance Maintain or Improve SR 509 Spur Operations between I-5 and SR 509		I-5 Performance Maintain or Improve I-5 Operations between I-705 and SR 18		Travel Time Reduce travel time between Urban Centers, and Manufacturing Industrial Centers in Pierce & S. King County		Travel Time Reliability Improve travel time reliability between Urban Centers, and Manufacturing Industrial Centers in Pierce & S. King County		Complete Freeway Network / Redundancy Achieved	Delay Reduce hours of delay in subarea network	Economic Benefit Improve economic vitality	Local and Regional Comprehensive Plan Support local and regional comprehensive land use planning and development	Safety # of Serious Injury and Fatal Crashes (I-5 & SR 167 & SR 509)	Safety # of Serious Injury and fatal crashes on local arterials	Number and location of Crossings Reduce Pedestrian vehicle exposure by reducing traffic volumes		Continuity and Consistency of Pedestrian Facility Improve Pedestrian & Bicycle continuity along new corridor		Sensitive Area Impact Reduce area of impact to sensitive areas	Forward Compatibility Right of Way Impact Reduce Right of Way Impact	Compatibility With Transit Long Range Plans
SCENARIO																							
No Build																							
Scenario 2A: Limited I-5 Connectivity																							
Scenario 2B: Full Connectivity at I-5 and Meridian																							
Scenario 4A: Moderate Connectivity at I-5 w/Full Meridian Connectivity																							

# Performance Evaluation Results – Key Takeaways

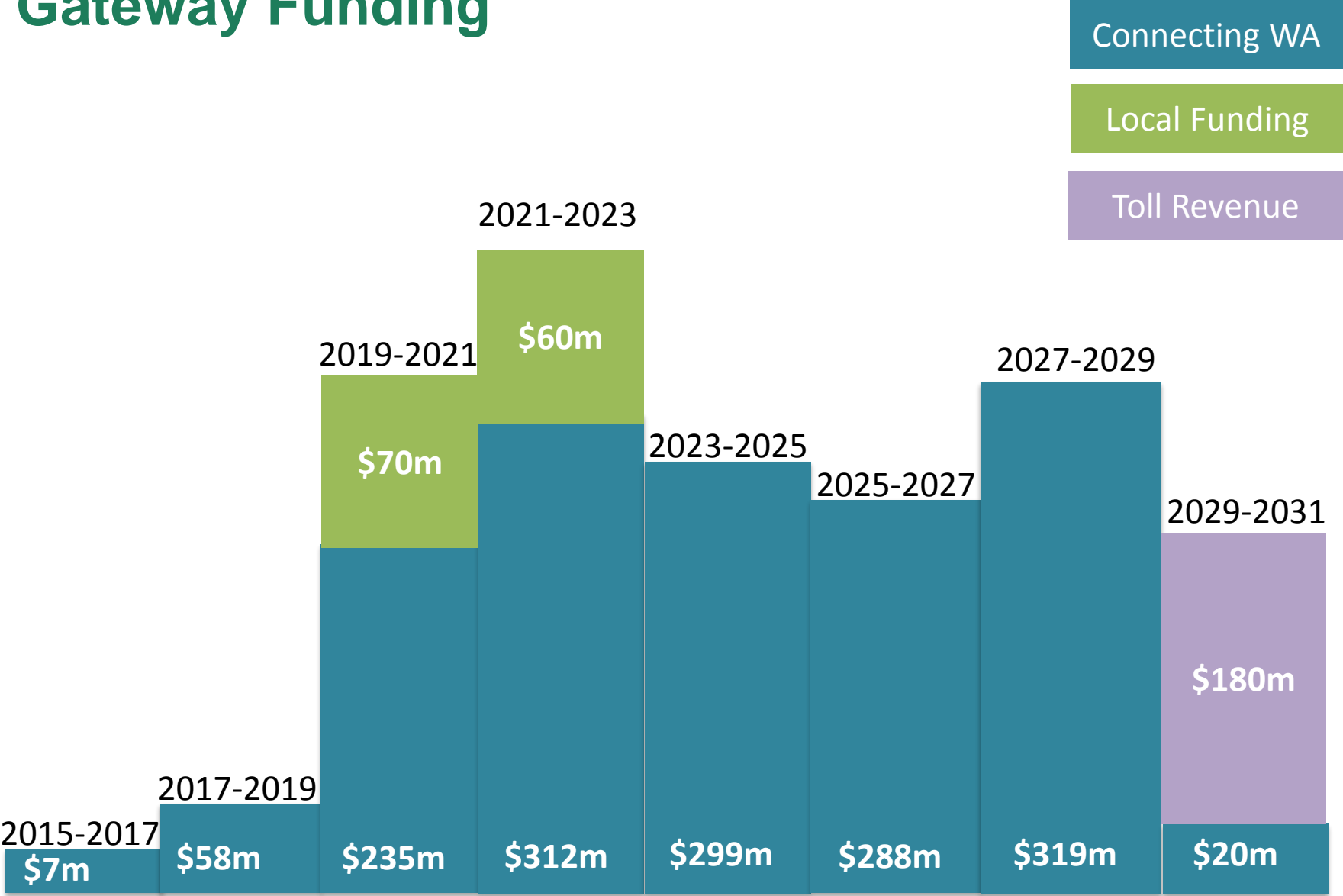
Key areas where scenarios differed in performance:

- Half-diamond would be near or at capacity at day of opening
- Diverging diamond operates better than half-diamond and has ability to handle future growth
- More throughput on SR 167/SR 509 is allowed with diverging diamond
- Direct connect ramps to I-5 operate slightly better than the diverging diamond
- Northbound auxiliary lane improves I-5 operations
- Scenario 2A did not perform as well as 2B and 4A – recommend moving these two scenarios forward for mesoscopic modeling.

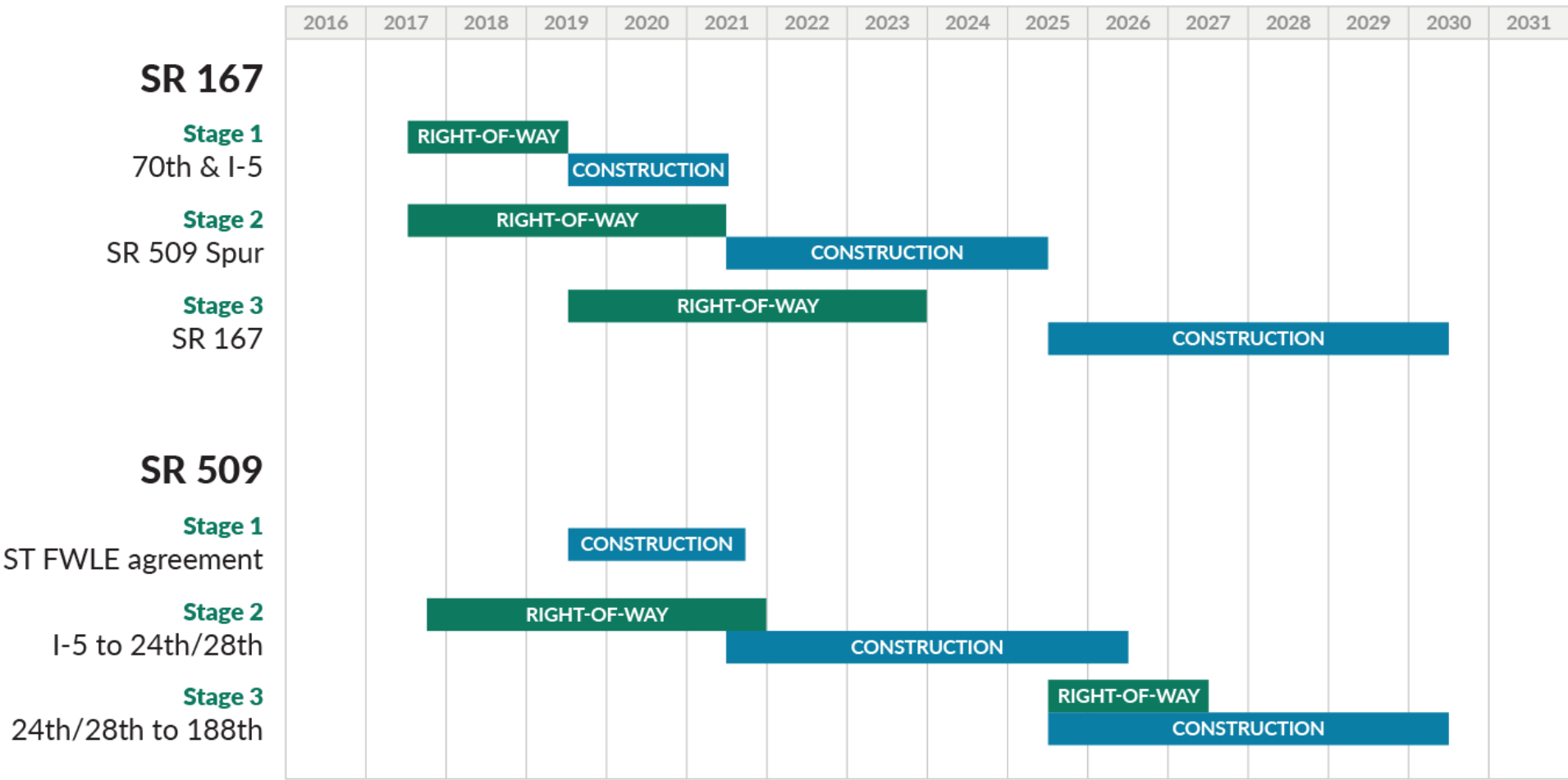
# Program Cost Estimates



# Gateway Funding



# Preliminary Gateway Construction Staging





# FASTLane Grants

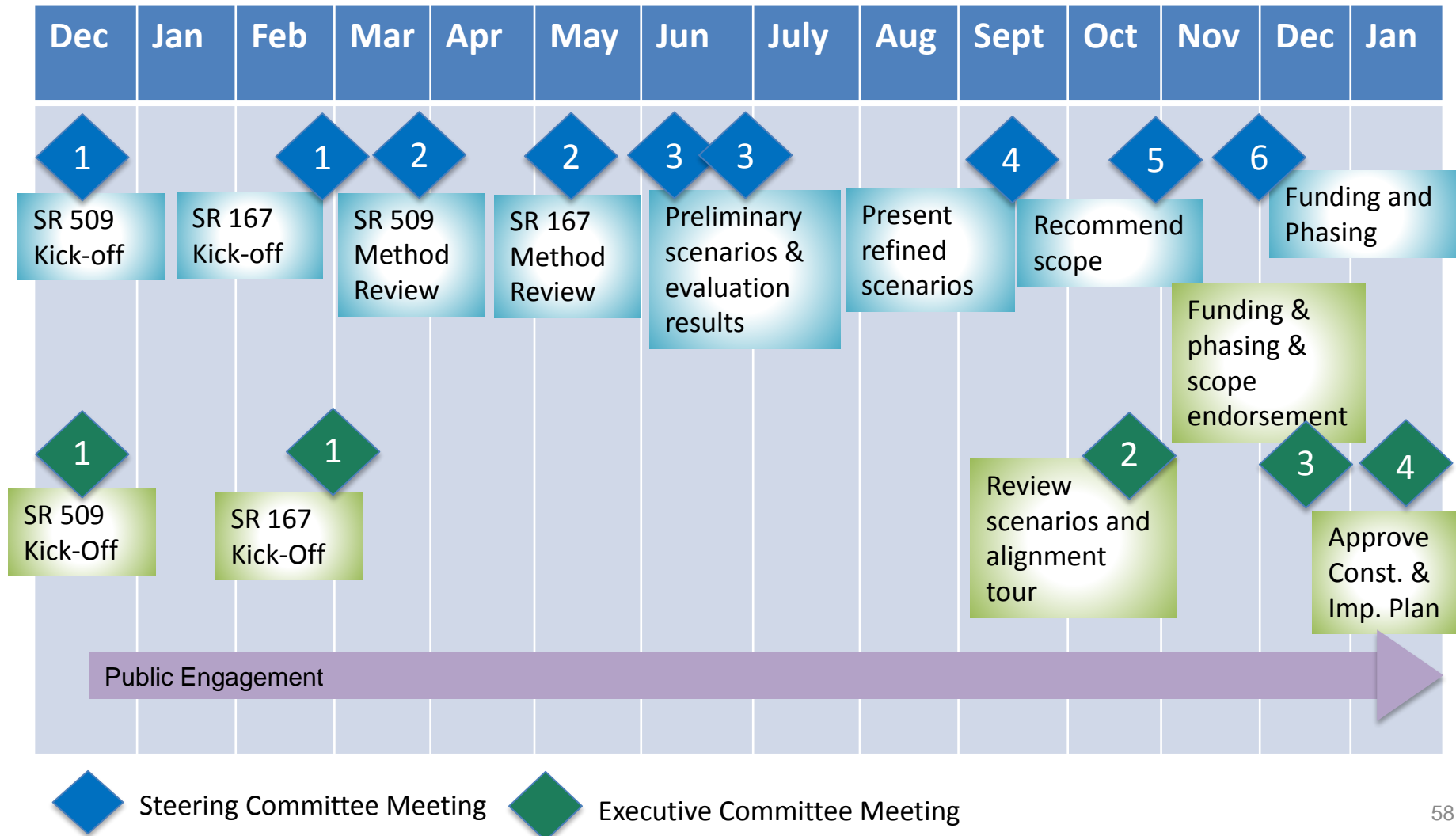
- New Federal grant program focused on freight projects
- \$4.5B authorized through 2020 (about \$1B/year)
- \$800M awarded in 2016 to 18 Recipients (212 applications received totaling almost \$10B)
  - South Lander Street Grade Separation (Seattle) - \$45M of \$140M
  - Strander Boulevard Extension (Tukwila) - \$5M of \$38M
- Key Questions for Puget Sound Gateway Program
  - Who?
  - When?
  - How Much?

# 2016 FASTLANE Grants

State	Project	Project Size	Grant Amount	Project Cost	Share
VA	Atlantic Gateway	Large	\$165M	\$905M	18%
DC	Arlington Memorial Bridge	Large	\$95M	\$166M	54%
OK	US 69/75 Bryan County	Large	\$62M	\$120.6M	51%
LA	I-10 Freight CoRE	Large	\$60M	\$193.5M	31%
AZ	Interstate 10	Large	\$54M	\$157.5M	35%
CA	SR 11 Segment 2 & SB Connectors	Large	\$49M	\$172.2M	29%
<b>WA</b>	<b>South Lander St</b>	<b>Large</b>	<b>\$45M</b>	<b>\$140M</b>	<b>32%</b>
GA	Port of Savannah	Large	\$44M	\$126.7M	35%
MA	Conley Terminal Intermodal Imp.	Large	\$42M	\$102.9M	41%
WI	I-39/90 Corridor	Large	\$32M	\$1,195.3M	3%
NY	I-390/I-490/Rt. 31 Interchange	Large	\$32M	\$162.9M	20%
<b>WA</b>	<b>Strander Blvd Ext &amp; Grade Separation</b>	<b>Small</b>	<b>\$5m</b>	<b>\$38M</b>	<b>13%</b>
<b>Total for 18 FASTLANE Projects</b>			<b>\$759.2M</b>	<b>\$3,612.4M</b>	<b>21%</b>

*\*Does not show 6 smaller projects that received grants*

# Program Schedule to Construction and Implementation Plan



## More information:

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